
MEMORANDUM

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FROM: JULIET CHRISTIAN-SMITH, PACIFIC INSTITUTE
EDWARD OSANN, NATURAL RESOURCES DEFENSE COUNCIL
SUBJECT: RESPONSE TO COMMENTARY FROM FARM WATER COALITION ET AL.
DATE: 10/21/2010
CC: KAMYAR GUIVETCHI

The California Department of Water Resources received an issue paper dated May 6, 2010 from the Farm Water Coalition and a number of agricultural water suppliers entitled “SBX7 7 – Water Conservation, Agricultural Measurement Requirement.” We received a copy of that paper at the second Agricultural Stakeholders Committee on September 22, 2010. At that meeting, the Department of Water Resources solicited feedback from the Committee on the paper and this memo represents our response.

The paper’s main purpose is to suggest a range of water measurement options; however we find that several of the options do not meet the legislation’s intent. The Water Conservation Act of 2009 (the Act) is clearly designed to encourage better management of water, including more accurate measurement of the volume of water delivered to individual customers in order to allow pricing structures “based at least in part on quantity delivered.” Although the current rule-making process is focused on measurement, the legislation requires that the methods of measurement be sufficient to support customer billing. We find this to be a critical point, which we will return to after discussing each measurement option listed in the paper.

The paper suggests four measurement options, two of which we find to be well outside the language and intent of the Act: basin-wide analysis and water agency laterals. While basin-wide water balances may be useful for state planning purposes, it is clear to us that such a coarse scale of analysis would not allow water suppliers to quantify the water delivered to individual customers, or form a legitimate basis for a volumetric pricing structure.

Similarly, measurement at the distribution system lateral may have value for water system managers, but does not meet the intent of the law, as laterals typically supply multiple farms and turnouts. Under this approach, quantifying actual deliveries to individual irrigators rests on a string of assumptions, as described here:

“Daily measurements would be taken of water to and from each lateral, i.e., canal or pipeline. By comparing such use with evapotranspiration (ET) and a factor for in-lieu recharge, depending on soil type, a measured volume of water can be

determined. Individual unmeasured turnouts would need to be linked to parcels that receive surface water. There would need to be a daily accounting for water deliveries to turnouts, thus determining what parcels were using water. As a result, measured water use per day, per parcel could be accounted for on a daily basis. Such measured water would need to be reconciled with crop consumptive-use on a seasonal basis to validate reasonable crop use rates with measured applied rates prior to billing for water use and reporting of aggregate water use as required under current law. Landowners shall be noticed of annual water use with a thirty-day protest period and public hearing to address concerns prior to billing and reporting.”

These techniques are imprecise, costly, and cumbersome. Measurement is necessary at the turnout level in order to support the intent of the law.

Finally, the May 6 paper offers an appropriate water measurement location (the turnout), and also refers to the metering and measurement defined by the Central Valley Project Improvement Act and the Bureau of Reclamation. Measurement at the turnout level meets the law’s requirement to measure water in order to support volumetric billing of customers and to provide greater incentives to individual customers to conserve water. In addition, the Bureau of Reclamation’s metering and measurement requirements require +/- 6% accuracy. Applying the Bureau’s metering and measurement requirements to the turnout level would provide a useful model for this process. In the end, DWR’s rule-making process must determine valid techniques to “measure the volume of water delivered to customers” to enable agricultural water suppliers to “adopt a pricing structure for water customers based at least in part on quantity delivered.” If the techniques chosen do not support customer billing, then they will not be consistent with the clear language and intent of the Act.

In summary, the intent of this legislation was to improve the accuracy of agricultural water use measurement and reporting, moving California towards empirical agricultural water use measurements rather than often inaccurate estimates of regional water balances or theoretical crop water demand. A range of measurement techniques are available at the turnout level that may comply with the intent of the legislation while also offering a variety of options to agricultural water suppliers.

Thus, we suggest that the conversation around water measurement be focused on measurement at the turnout, and explore viable options, such as types of measurement devices and their accuracies. For instance, some water measurement devices estimate discharge using the head or pressure of flowing water:

- Weirs,
- Flumes,
- Orifices, and
- Venturi meters.

Other water measurement devices measure velocity:

- Current and propeller meters, and
- Vane deflection meters.

Still others are flow totalizers, which empirically measure the total discharge. Selecting the proper water measurement device for a particular site involves site-specific factors that must be considered. These factors may include:

- Accuracy
- Costs
- Range of flow rates
- Ability to pass sediments and debris
- Construction, operation, and maintenance requirements
- Types of measurements and records needed
- Device standardization and calibration

In conclusion, the Bureau of Reclamation's Water Measurement Manual (first published over 60 years ago) lists a variety of compelling reasons why we should work diligently to implement the intent of this new legislation for a variety of important reasons:

“Besides proper billing for water usage, many benefits are derived by upgrading water measurement programs and systems. Although some of the benefits are intangible, they should be considered during system design of when planning a water measurement upgrade. Good water management requires accurate water measurement. Some benefits of water measurement are:

- Accurate accounting and good records help allocate equitable shares of water between competitive uses both on and off the farm.
- Good water measurement practices facilitate accurate and equitable distribution of water within a district or farm, resulting in fewer problems and easier operation.
- Accurate water measurement provides the onfarm irrigation decision maker with the information needed to achieve the best use of irrigation water applied while typically minimizing negative environmental impacts...
- Instituting accurate and convenient water measurement methods improves the evaluation of seepage losses in unlined channels. Thus, better determinations of the cost benefits of proposed canal and ditch improvements are possible.
- Permanent water measurement devices can also form the basis for future improvements, such as remote flow monitoring and canal operation automation

- Good water measurement and management practice prevents excess runoff and deep percolation, which can damage crops, pollute groundwater with chemicals and pesticides, and result in project farm drainage flows containing contaminants.
- Accounting for individual water use combined with pricing policies that penalize excessive use.”

The Water Conservation Act of 2009 provides a clear message from the Legislature that California must become more efficient with its scarce water resources. In the face of ecosystem collapse in the Delta, decreased snowmelt, recent drought, and projections of more frequent and intense droughts in the future (DWR 2010), this law is critical to meeting current and future water demands in our state. We urge the Department of Water Resources to ensure that the agricultural water use measurement methods specified in the forthcoming rule are robust and fulfill the intent of this landmark statute.